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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/982,823	10/22/2001	Shih-Heng Chen	3626-0228P	8282

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EXAMINER

TRAN, KHAI

ART UNIT PAPER NUMBER

2637

DATE MAILED: 04/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/982,823

Applicant(s)

CHEN, SHIH-HENG

Examiner

KHAI TRAN

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 October 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-14 is/are allowed.
- 6) ☒ Claim(s) 15 is/are rejected.
- 7) ☒ Claim(s) 16-21 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 15 is rejected under 35 U.S.C. 102(b) as being anticipated by Critchlow (U.S. Pat. 5,276,706).

Regarding claim 15, Critchlow discloses a phase demodulator as shown in Figure 1, comprising: a radio frequency (RF) circuit (an antenna 15 and down converter 16), which receives an analog high-frequency signal and converts it to an analog I.F frequency signal (col. 5, lines 17-22); an analog-to-digital converter (A/D converter 18), which is electrically coupled with the RF circuit to receive the analog I.F signal and to

convert the analog I.F. signal and to convert it into a digital signal; a matched filter (24), which is electrically coupled with the A/D converter and generates an in-phase signal (I) and a quadrature signal (Q) according to the digital signal; and a symbol timing recovery circuit, which is electrically coupled with the matched filter and obtains an optimal sampling according to the in-phase signal and the quadrature signal (col. 5, lines 17-56).

Allowable Subject Matter

4. Claims 1-14 are allowed.
5. Claims 16-21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
6. The following is a statement of reasons for the indication of allowable subject matter: none of the prior art of the record discloses a symbol timing recovery circuit comprising: a selection circuit is electrically coupled with the transform value generation circuit to receive the transform value output from the transform value generation circuit and to output the transform value according to the order of the sampling point; a plurality of accumulators for receiving the transform value of a corresponding sampling point output from the selection circuit; a comparison module is electrically coupled with the plurality of accumulators for comparing the accumulated values to obtain a maximum accumulated value as recited in claim 1; a plurality of delay circuits connected together in series with a first delay circuit and the last delay circuit electrically connected to the operation circuit, the transform value of each sampling point from the delay circuit

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being added at the corresponding time in each symbol cycle, and accumulated value by summing over the transform values of summing point being output by the delay circuits respectively after a predetermined time as recited in claim 7; and summing the product of the in-phase signal components of any two consecutive symbols and the product of the quadrature signal components of the same two consecutive symbols to obtain a first transform component, taking the difference between the product of the in-phase signal component of a previous symbol and the quadrature signal component of a current symbol in any two consecutive symbols and the product of the in-phase signal component of the current symbol and the quadrature signal component of the previous symbol in the same two consecutive symbols to obtain a second transform component as recited in claim 13.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Chuang et al (U.S. Pat. 4,941,155) disclose a method and circuitry for symbol timing and frequency offset estimation in time division multiple access radio systems.

Guo (U.S. Pat. 6,566,941) discloses a phase detection method.

Pollmann et al (U.S. Pat. 6,597,733) disclose a equalizer for broadband wireless application.

Toplicar et al (U.S. Pat. 6,693,590) disclose a method and apparatus for a digital phased array antenna.

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Chen (U.S. Pat. 6,873,666) discloses a symbol timing recovery circuit.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to KHAI TRAN whose telephone number is (571) 272-3019. The examiner can normally be reached on 7:00AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JAY PATEL can be reached on (571) 272-2988. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


KHAI TRAN
Primary Examiner
Art Unit 2637

KT
April 14, 2005